Abstract

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Polycyclic aromatic hydrocarbons (PAH) are compounds dangerous for both environment and human health. Monohydroxyderivatives of PAH are their very important derivatives that arise in the detoxification process of PAH in the body of human and other organisms. Some monohydroxyderivatives of PAH have been assessed as a marker of PAH exposure.

The main goal of this work was to optimize the analytical method for determination of selected PAH monohydroxyderivatives (1-hydroxypyrene, 2-hydroxyfluorene, 1-hydroxynaphtalene, 1-hydroxyacenaphtene) in the bodies of cephalopods.

The used method was high-performance liquid chromatography with fluorescence detection. The detection wavelengths and mobile phase composition were selected. A column study, verification of antioxidant application and degradation study were carried out. Subsequently the optimization of conditions for determination of all four substances simultaneously was done.

Based on these steps, for the partial experiments ACE C_{18} column was selected with the mobile phase composed of methanol and water in a ratio of 5:95. For the determination of all analytes simultaneously and for the subsequent determination of the samples PAH C_{18} column was selected with the mobile phase composed of acetonitrile and water under gradient elution. The use of antioxidants has not proven. The wavelengths 346/390 nm for 1-hydroxypyrene, 266/336 nm for 2-hydroxyfluorene, 266/348 nm for 1-hydroxynaphtalene and 232/338 nm for 1-hydroxyacenaphtene were selected.

The next steps of the research will aim to optimize the extraction of PAH monohydroxyderivatives from fatty tissues of cephalopods, followed by the assay of these substances in them.